SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE •

JUNE 17, 1933

Shell of the Sky

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Edited by WATSON DAVIS

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DO YOU KNOW?

Henna comes from the leaves of the camphire shrub.

A survey showed that 75 per cent. of garment workers had some defect in vision.

The Mosquito Coast of Nicaragua was not named after mosquitos but after the Misskito Indians who live there.

One of the unusual uses for "dry ice" is to freeze quicksands that are encountered occasionally during excavations for buildings.

The new 2,300 mile graded highway crossing Venezuela, Columbia, and Ecuador is so near completion that 2,000 miles have been opened to traffic.

The U. S. Lighthouse Service has tried photronic cells to turn on and extinguish lights automatically each day, and has found them satisfactory.

At the top speed of Sir Malcolm's record automobile dash, the tires each increased approximately one inch in diameter because of centrifugal force.

Link sausage stuffed with haddock or cod are a novelty recently introduced.

The New Hampshire Extension Service has aided the unemployed to start over 5,700 subsistence gardens.

As long ago as 500 B. C., Persia had a highway system with permanent signs, traffic police, and inns for travelers.

Insects that usually prey on grasshoppers are slacking on the job this year, it has been observed in North Dakota.

An expedition has sailed for Guadelupe, off Lower California, to hunt elephant seals for a Field Museum exhibit group.

When Marco Polo visited China in the Middle Ages, he found wild game guarded and fed in a definite game preservation system.

The Chinese used to call their country by the name of the reigning dynasty; whence the western world derived the name China, from the Chin dynasty.

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These curiosity-arousing questions show at a glance the wide field of scientific activity from which this week's news comes. Book references in italic type are not sources of information of the article, but are references for further reading. Books cited can be supplied by Book Dept., Science News Letter, at publishers' prices, prepaid in the United States.

ARCHAEOLOGY

American Pyramids Served as Timepieces, Survey Shows

Structures Are Found Uniformly Askew From Compass Directions Just Enough to Face Setting Sun at Equinoxes

PROOF that Indians in Mexico built pyramids to serve as astronomical timepieces has been secured by a Mexican government archaeologist, Sr. Ignacio Marquina.

Thus the ancient pyramids of America are awarded astronomical significance which researchers have sought vainly in the Egyptian pyramids. Egypt's pyramids are tombs but not timepieces, Egyptologists almost universally admit. Mexico's pyramids, on the other hand, are pedestals for high temples, and some at least are oriented to mark the passing of the sun and certain stars.

Sr. Marquina has demonstrated that the carved pyramid of Tenayuca, built by Aztec Indians, was a sun-dial which accurately marked the moment when the New Year began. The Mexican New Year was July 26.

Sr. Marquina's attention was drawn toward possible relationship of sun and pyramids when he surveyed the archaeological sites of Mexico. He noticed that the angle at which principal pyramid-temples faced was apt to be followed by all monuments and buildings of a city.

He also observed two ideas in orientation. In southern Mexico and Guatemala and southern Yucatan, the buildings generally were square to the four world directions, and facing astronomical west, exactly between the two points where the sun sets in the summer and winter solstices.

True of Toltec Culture

But farther north, in places allied with Toltec Indian culture, he found the main pyramids skewed a little from facing west. They faced slightly northward, the angle of deviation varying with the latitude of the city. This was the case at such widely scattered cities as Chichen Itza, Uxmal, Teotihuacan, Tenayuca and Cholula.

At Tenayuca, Sr. Marquina made tests to see whether this constant arrangement at cities so far apart obeyed some astronomical rule. He measured the angle which the setting sun makes with the center of Tenayuca's pyramid. He measured it for summer and winter solstices, the spring and autumn equinoxes, and the two times in the year when the sun passes overhead.

It was strikingly demonstrated that the building looks directly into the setting sun on May 16 and July 26 of every year. Those are the two days when the sun crosses overhead in the zenith. On those days there is a moment when an upright object casts no shadow because the sun is directly above it. This sign, so easily observed, is the simplest way of marking the passing of a year.

Stars Tested

From proving relationship with the sun, Sr. Marquina proceeded to test lines certain stars made with the Tenayuca pyramid.

He found that the stars important to Mexican Indians in their religion were stars whose lines of sight coincided with the sun lines on the solstices, the equinoxes, and the sun's zenith. It appears that those stars were important because they did coincide.

The leading star was Aldebaran, which was on the line of sight of the setting sun on the two days when the sun crossed the zenith. Thus the ancient architects could use Aldebaran to guide them in setting their pyramids at the right angle, and they did not have to wait for the two days in the year when the sun would mark the spot.

Lord of the Night

In Aztec lore, Aldebaran was called Lord of the Night, and he belonged to the constellation of the new fire. In all the Aztec empire new fires were made on New Year's Day by rubbing together sticks shaped like that constellation.

Mexican archaeologists now believe that the Tenayuca pyramid was rebuilt seven times, like an ever-growing nest of boxes, not because the Indians wanted to repair it or make it bigger, but for ceremonial reasons. It is possible, they say, that the re-building times marked beginnings of the 52-year "centuries" of the Indians when everything old had to be destroyed or made new.

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GENERAL SCIENCE

Galaxy of Foreign Scientists Invade Century of Progress

A GALAXY of foreign scientists, over a sixth of them Nobel prize winners, will be guests of Chicago's Century of Progress exposition and the American Association for the Advancement of Science from June 19 to July 1 when thousands of scientists and engineers will gather to see the exposition and hold hundreds of meetings.

From the various intellectual centers of the world, 28 foreign scientists are on their way to Chicago as guests of America.

Five of them are Nobel prize winners and they are likely to meet during their stay at Chicago a number of America's five living Nobel prize winners in science.

The Nobelists among the foreign guests are: Dr. F. W. Aston of Cambridge, England, (chemistry 1922); Dr. Niels Bohr, of Copenhagen, Denmark (physics 1922); Dr. A. V. Hill of London (medicine 1922); Dr. August Krogh of Copenhagen (medicine 1920); Dr. Theodor Svedberg of Upsala, Sweden (chemistry 1926).

The other foreign guests are: Dr. Otto Appel of Berlin, agriculture; Dr. G. A. Bagge of Stockholm, economics; Dr. Joseph Barcroft of Cambridge, physiology; Dr. A. Mendelssohn Bartholdy of Hamburg, political science; Dr. Jakob Bjerknes of Bergen, meteorology; Dr. Filippo Bottazzi of Naples, physiology; Dr. Ludwig Diels of Berlin, botany; Dr. Jean Dufrénoy of France, agriculture; Dr. Leopold Fejer of Budapest, mathematics; Dr. Enrico Fermi of Rome, physics; Dr. A. P. M. Fleming of Manchester, engineering; Dr. R. Goldschmidt of Berlin, zoology; Dr.

Herbert J. Gough of London, engineering; Sir Daniel Hall of London, agriculture; Dr. C. U. A. Kappers of Amsterdam, anthropology and physiology; Dr. Wolfgang Koehler of Berlin, psychology; Dr. Tullio Levi-Civita of Rome, mathematics; Dr. Emilio Mira of Barcelona, psychology; Dr. William Oualid of Paris, political economy; Dr. Henri Pieron of Paris, psychology; Dr. J. J. Sederholm of Helsingfors, geology; Dr. Charles E. Spearman of London, psychology, and Dr. R. J. Tillyard of Australia, entomology and paleontology.

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AERONAUTICS

Stratosphere Shell Prepared For Navigators

See Front Cover

THE LITTLE metal sphere that will be the stratosphere home of two men and scientific instruments for a few hours next month is rapidly being completed. (*SNL, May* 27, '33, *p.* 323) It is pictured on the front cover with Dr. Jean F. Piccard emerging at the unfinished vertex of the "orange peel" sections of dowmetal, the magnesium alloy one-third lighter than aluminum.

The sphere is truly a shell of the sky. Though seven feet in diameter, its metal sheeting is only one-eighth of an inch thick. The weight is 200 pounds, compared with 300 for the sphere used by Prof. Auguste Piccard last year. There are to be two manholes and eight portholes distributed so that vision will be free in all directions. The floor will be made of dowmetal and a space four feet square is being left for the occupants.

Four struts will be used inside, and shelves at three levels will hold all instruments, ballast and food in place. Ballast will be dumped through a tank which may be sealed to prevent loss of pressure. The navigators expect to close the portholes at an altitude which will leave the pressure at about eight and a half pounds after they ascend ten or eleven miles. The ascent is to be made from Chicago in connection with the Century of Progress exposition.

The gondola will be painted a light color on the top and black on its lower sides and bottom. Thus the metal's ability to absorb heat in the morning and afternoon, when heat will be needed most, will be increased.

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The oldest known medical school was founded by the Persian conqueror Darius in Egypt.

ENDOCRINOLOGY

Adrenal Cortex May Regulate Salt and Water in Body

New Type of Gland Disorder Brings Obesity Apparently By Disturbing Body's Handling of Water

THE VITAL cortex of the adrenal glands may have an influence on the regulation of salt and water in the body similar to that of insulin on sugar, the parathyroid glands on calcium and the thyroid gland on iodine. Evidence indicating that this may be the case was presented by Dr. R. L. Zwemer of the College of Physicians and Surgeons, Columbia University, at the meeting of the Association for the Study of Internal Secretions in Milwaukee.

The salt in this case is sodium. It is a loss of sodium from the body rather than any great increase in acid that produces the lower carbon dioxide combining power of the blood which is an early indicator of insufficient adrenal gland functioning, Dr. Zwemer believes.

In cats that have lost their adrenal glands, extract of the adrenal cortex increases the amount of sodium and chloride in the blood, Dr. Zwemer and his associate, Dr. Ruth Sullivan, found.

Drs. Zwemer and Sullivan working with animals, and Drs. Robert Loeb and Dana Atchley treating patients, found that giving common salt by mouth is helpful in conditions like Addison's disease in which the cortex of the adrenal gland is not producing enough of its vitally necessary hormone.

Cats that were given salt after removal of the adrenal glands survived twice as long as similar animals that got no salt.

While salt is helpful in these conditions of adrenal insufficiency, some of the adrenal cortex hormone or extract must be given to help out. Giving too much salt in these cases is as bad as too little. Drs. Zwemer and Sullivan have been able to calculate the exact amount of sodium necessary for cats suffering from adrenal insuffiiency.

A new, hitherto unrecognized glandular disorder was reported by Dr. Leonard G. Rowntree of Philadelphia and Dr. Louis A. Brunsting of Mayo Clinic. The disorder was seen in two young women, 20 years old, who were brought to the Mayo Clinic because they had suddenly become very fat. They could not get rid of the excess weight by any of the measures for reducing.

"Both patients were superlatively feminine in appearance with luxuriant hair and exaggerated feminine configuration," the physicians found on examination. Both patients had matured at a younger age than the normal.

With the idea that the obesity was due to derangement in the body's handling of water, the patients were given treatment to remove the water from their bodies. This was done by the use of ammonium salts and the newer mercury compounds. As a result, the weights of the two patients were reduced to practically normal.

After their return home, one patient regained the weight she had lost. The other patient was able to keep her weight down by continuing the ammonium and mercurial compounds and by restricting her intake of water.

The condition might be the result of an early excess of one of the hormones of the pituitary gland, known as Prolan A, Drs. Rowntree and Brunsting suggested.

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ARCHAEOLOGY

Tut-Ankh-Amen's Mother-in-Law

BEAUTIFULLY sculptured in the almost impossibly hard stone, quartzite, a portrait head newly found at Tell el Amarna in Egypt may prove to be an image of Queen Nefertiti one of whose daughters married the long-posthumously famous Tut-ankh-amen. It has been compared with the famous portrait bust of Nefertiti now in the Berlin Museum in its slender beauty and its aristocratic poise.

For some reason the sculptor never finished his work. The back of the head and one side of the face were left unsmoothed, with the black guide-marks still on them. But the artist was suffi-

UNFINISHED BEAUTY

ciently satisfied with his partly-completed work to paint the stone lips a bright red.

The same British expedition which uncovered the new portrait head also found a broken sculpture, in unfinished condition, showing the face of Nefertiti's consort, the "heretic pharaoh" Ikhnaton, who tried to introduce a monotheistic religion in the place of Egypt's worship of many gods. Another discovery was a slab bearing in low relief the portraits of Ikhnaton and of his son-in-law, Smenkhkara.

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GEODESY

Sea Level Higher on Pacific Than on Atlantic Coasts

SEA LEVEL is not strictly on the level. It is higher in some places than it is in others, H. G. Avers, chief mathematician of the division of geodesy, U. S. Coast and Geodetic Survey, informed scientists attending the Fifth Pacific Science Congress in Vancouver.

At Prince Rupert, B. C., mean sea level is 1.64 feet higher than it is at Halifax, N. S.; at Seattle it is 1.18 feet higher than at Portland, Maine, and at San Diego, Calif., it is 1.74 feet higher than it is at Fernandino, Florida.

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PSYCHIATRY

Mental Attacks Return Mind Of Young Woman to Infancy

Parental Cruelty is Apparently Responsible For Adult Using Baby Talk and Amusing Self With Ticking Watch

TIME TURNED backward for the young married woman, 20 years old, described by Dr. Mandel Sherman and Blake Crider, of the University of Chicago, in a report to the *American Journal of Psychiatry*.

After an accident in which she wrecked the family automobile, this girl, whose last name is withheld from publication, was subject to severe attacks sometimes diagnosed as epileptic seizures, in which she would be unconscious and insensible to pain. Following these attacks she would literally become as a little child.

One such turning back of time took her almost to infancy. She spoke in typical baby talk, and could neither write nor draw pictures. Although she is an inveterate smoker, she had no idea of what to do with a cigarette. She did not recognize her own name, Mabel Ruth, and then it was remembered that the Ruth was an addition that had not been made until she was 14 years old.

Another attack took her still further back into babyhood. She smiled and played just as would a child about two years old. She was greatly amused by the ticking of a watch, reached for it and held it to first one ear and then the other, and then would toss it into the air as though it were a ball.

In other attacks, she re-lived various experiences of her childhood—many of them connected with some bit of cruelty of her foster mother.

For that seemed to be the origin of her mental troubles. Mabel Ruth had been placed in an orphanage by her parents during her first year and was adopted when she was 16 months old. Not until she was 12 did she hear that her foster parents were not her own, and then it was through unkind gossip that it reached her ears. One aunt told her untruthfully that she was the illegitimate daughter of her foster father.

This foster father was kind to her, but the mother was cruel and would slap and kick her and even strike her with a broom handle. Her foster relatives were considered community problems and several had very unsavory reputations. At 19 she married to get away from home, but was not in love and the marriage was very unhappy. It was after the marriage that the attacks became most severe.

During the returns to childishness, standardized mental tests were given her, and she passed them as would the child she seemed to have become.

Treatment consisted in discussing her trouble with her and showing her that past events and difficulties were the basis for her present attacks. Through a local newspaper she was enabled to locate her real parents. Within a year she became apparently normal.

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AGRICULTURE

Hot Weather Favors Belated Spring Planting

SUDDEN hot weather and a cessation of rains, coming on the heels of a most persistently wet, cold spring, has already undone much of the mischief wrought by the earlier unfavorable conditions, a survey by the U. S. Weather Bureau has disclosed. Over most of the grain belt states, where spring planting was held back until farmers had begun to be alarmed, the bulk of the crop is in. Farmers have put in extra long hours at the planting, in many cases working late at night. The high temperatures, ranging from 10 to 13 degrees above normal, have favored quick germination and growth.

On the basis of past records, the weather during May and to date in June should be favorable for a good yield of spring wheat. There has been a fairly close correlation between wet, warm weather in May and June and a good spring wheat crop in former years; and the weather conditions in the spring wheat area so far are those of a "good year."

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ETHNOLOGY

For Red Men Only

The Strangest Religion in America, the Peyote Church, Claims Converts in Over 40 Tribes and is Still Growing

THE STRANGEST religion in America—

Ten to one you have never heard of it. Yet, it is spreading, dividing into sects as neatly pigeonholed as Methodists, Baptists, Episcopalians. It is a growing religion. One ethnologist who is studying it declares that it cannot be dismissed as a minor cult. It is an important force.

This Native American Church, as it is called, is a startling, yet understandable blend of paganism and Christianity. It holds services with a religious hush and solemnity. There are prayers and hymns. Now and again, the name "Jesus" may be made out in the songs. There is a crucifix beside the altar. But the music is the throb of the water drum, and the light, thready beat of a gourd rattle. And the altar burns with a fire on which lie the dried flower tops of a sacred cactus plant, the peyote.

Around the gathering are passed these tops, or buttons, of the peyote plant and in sacramental quiet the bitter, mushroom-like morsels are taken and chewed. The peyote-chewer fixes his mind on religious things. He sits meditating on the problems of the world, of brotherhood, of religion in his own life. In all these matters he gains new light through peyote—the teacher.

So runs the service in a peyote church, all night.

The peyote church is an Indian affair. That is why its progress has gone unnoticed by the general public in America. But this peyote church is much more than the religion of some small Indian group. For the first time, an Indian religion has crashed through the barriers that tribes raise to set apart their own rites and ceremonies. In tribe after tribe, red men have listened to the testimony of visiting Indians—casual missionaries—telling what the peyote plant has done for them.

The peyote church counts its converts today among forty-odd tribes. They are scattered as far as the Kiowas and Delawares in Oklahoma, the Cheyennes in Montana, the Winnebagos of the Great Lakes region, one Pueblo group in the Southwest, various tribes in Mexico.

At American museums, where the doings of the Indian are a subject of keen scientific interest, peyote-eating is an old story, but a story that is still not clearly understood. The growing influence of the Native American Church has given science a new incentive to try to understand what the Indian sees in peyote, and what peyote does to the Indian. All of which is far harder to find out than it sounds.

At the University of Pennsylvania Museum, Vincent M. Petrullo, young explorer and ethnologist, is completing an intensive study of the elusive peyote cult. Making friends with Delawares in Oklahoma, where the Native American Church got its first state charter and where the cult is strongest, Mr. Petrullo has talked with leading theologians of the church. They have expounded to him its doctrines and its benefits. He also interviewed Indian converts, and other skeptical or disbelieving Indians who told how they tried peyote and found it no good.

The religious wave sweeping across Indian America recalls the rise of Mormonism with its spirit of revelation. Brigham Young, famous prophet of the Mormon faith, might be matched in the peyote religion by John Wilson of the Delawares, who is already a legendary figure.

"Another Sect is Born"

One day, an Indian of the peyote church announces that new truth has been revealed to him. He recites a new creed. He describes a new kind of altar to be made. He lays down the ritual to be followed. So, another sect of the peyote church is born.

"I know of nine forms of peyote ceremony among the Delawares," said Mr. Petrullo. "Eight are still practiced and have some hold on these Indians. Once a form is revealed, the Indians feel that it must not be tampered with. But any individual may have a new type revealed to him."

All these forms of the peyote religion are strange mixtures, containing three ingredients.

CHIEF BACON RIND

—Osage Indian, was a joiner. He was a Catholic, a Mason and member of the peyote church.

First, there are ideas from the old peyote cult, which was originally a local religious ceremony of the Aztecs and some other Mexican tribes.

Then, ideas are taken from the old religion of the Indian's own tribe.

And, lastly, some of the thought and symbolism of Christianity are added.

Christianity is not much more than a seasoning in the mixture. It is conspicuous, but superficial, Mr. Petrullo finds. For example, a crucifix is placed by the peyote altar as a gesture of courtesy to the white man's church. The Indian sees no incongruity in mixing religious ideas. One Osage Indian, Chief Bacon Rind, was a member of the Catholic Church, a Mason, and a member of the peyote church. At his death, not long ago, he bequeathed his regalia to the U. S. National Museum—the first Indian ever to will his belongings to the federal government.

Most peyote church Indians, however, feel that the white man's religion is for the white man, and that the Indian has his own revealed truth.

To Mr. Petrullo, one Indian explained

it this way: "This ceremony is for the Indian. The Great Spirit sent peyote to take care of the Indians who are His children. So, the white people cannot understand it. The Great Spirit sent Jesus to the white people."

Here is the theology of one Delaware Indian: "Somewhere back east a child was born. They named Him Jesus. The whites killed Him. He was sent by God our Father to take care of His children. When Jesus departed from this world, He took seven steps to reach our Father. With each step that He took He left words with Earth our Mother to take care of her children and God's—that is, the Indian people.

"The first step to reach our Father is peyote, the second is fire, the third is water, the fourth is clouds and rain, the fifth the moon, sixth the sun, and last our Father."

Another Indian theologian explains carefully: "God puts power in peyote. You talk to the peyote and eat it. It does not help you to go to heaven. It does not put goodness into you. Goodness is in you. God put it there. You pray to God to be healthy."

Whether peyote is the good teacher that its Indian disciples claim, or whether it is an insidious intoxicant with bad influence on the Indian, is something the white man has never settled. Delve into the literature on the subject, and you find it seething with strong statements and violent contradictions. Plenty has been written about peyote, but it still remains for scientific investigations to produce enough real facts to settle the arguments.

Spanish Priests Horrified

Objection to the Indian's use of peyote began almost as soon as the Spaniards landed in Mexico and set out to convert the aborigines to Christianity. Spanish priests soon came upon a small but vital cult among the Aztecs.

These Aztecs got religious inspiration from a plant they called the "flesh of God." They drank its juices and drifted off into intoxication lasting sometimes two days, the Spaniards reported. In an ecstatic state, some of the Indians danced and sang. Others sat stolidly alone and saw visions which they later described to the others. Some were inspired to prophesy about wars or the weather.

Horrified by these superstitious rites, the Spanish missionaries pronounced peyote-eating almost as grave a sin as cannibalism. In a little manual published for use of missionaries in Texas in 1760 may be read these questions for the confessional:

"Has comido carne de gente?" (Hast thou eaten the flesh of man?)

"Has comido el peyote?" (Hast thou eaten the peyote?)

But horrified as the Spanish fathers were, the peyote rites of Mexico got little notice for a long time. Not until the eighteen nineties did the rites begin to forge their powerful link with Christianity and to spread to distant tribes. The Native American Church got its state charter in Oklahoma in 1918.

Ten years ago, Dr. Paul Radin studied the peyote societies of the Winnebago Indians of Wisconsin and expressed the view that the cult was waning. Now, Mr. Petrullo finds it flourishing, growing. Some tribes are even cultivating the small spineless cactus, the peyote, not trusting the parcel post or Indian traders to bring their supply of the sacred plant.

Efforts of missionaries and others to stamp out peyote have met with little success.

The Office of Indian Affairs once gathered an array of opinions from its doctors and superintendents at the Indian reservations. A typical verdict, from an Oklahoma agency physician, said:

"The effect on those who attend the peyote feasts is that of general depression followed by idleness and laziness."

The Office of Indian Affairs summed up the views of its agents, saying, "Peyote contains dangerous drugs which have a deleterious effect upon the human system."

On the opposite side of the ledger are such reports as that of the French pharmacist, Alexander Rouhier. He has written a 350-page work on peyote, which arrives at the conclusion that the cactus is weakly poisonous, only when taken in large doses. He also disagrees with those who have called it habit-forming.

Mr. Petrullo, from his investigations among the Indians, believes that the harmful effects of the peyote cactus have been stressed without real proof that the plant was harmful.

"Peyote to the Indian," he finds, "is not a drug that causes its consumer to 'see things.' It is a spiritual guide subservient to the Great Spirit and appointed by Him to take care of the Indian. Thus, the ceremonies are not 'dope' consuming meetings, but intensely religious performances.

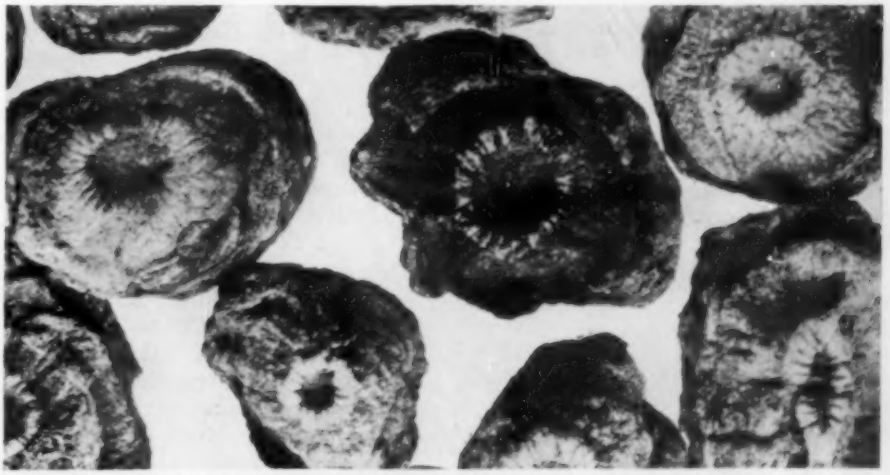
Best Men Often Peyotists

"There is no evidence that peyote is habit forming, and no evidence that it is detrimental to health. On the contrary, the peyotists are often the leaders and the best men of the tribe."

Mr. Petrullo declares that, with all the investigations and experiments, no white man has ever really entered the peyote world of the Indian.

Any number of psychologists, doctors, and curiosity seekers have had their adventure with a dose of the Indian cactus. Havelock Ellis was one of these, and he induced two poets to try it, just to find out how colorful the peyote vision of a poet might be. Weir Mitchell, Philadelphia doctor and well-known novelist, took six peyote buttons and described his sensations to a British medical journal.

But all these experimenters had mild doses of five or ten buttons or thereabouts. An Indian (*Turn to Page* 382)



"BUTTONS" OF THE SACRED CACTUS, THE PEYOTE

These dried flower tops are bitter stuff to chew, but Indians consume quantities of them as an aid to religious meditation.

METEOROLOGY

Wind Vortex Explains Wrecking of Akron

NOT STRUCTURAL failure, but a wind vortex, wrecked the airship Akron. A reconstruction of the recent disaster made by Prof. T. von Karmán and reported at a California Institute of Technology conference gives a picture that is in agreement with known facts.

The Akron was caught in a vortex. The wind above the ship was moving more slowly than the wind below the ship. This generated a force which could reach a magnitude of more than seventy tons; as the lift or buoyancy was at most 20 tons, the Akron was very suddenly forced down until one end struck the water, which caused shock enough to stop the ship and to tear it apart. The mechanical features and the handling of the ship were not at fault.

The Graf Zeppelin once had a quite similar experience when it suddenly lost a thousand feet in altitude and found itself about 200 feet above the ocean, Prof. von Karmán said. It was sheer luck that they came out of it at this height because they had absolutely no control of the situation.

Prof. von Karmán had given this problem of forces due to vortex to his students over a year ago when he did not anticipate that it would have the unhappy application provided by the Akron disaster.

A scientific analysis of the atmospheric conditions in the 12 hours just preceding the loss of the Akron was made and reported by Irving T. Krick, meteorologist to the Western Air Express. If the officers of the Akron had had the information contained in these charts, it is believed that they would not have dared to begin the fatal flight.

Science News Letter, June 17, 1933

ASTRONOMY

Weather Unusually Hot But Summer Hasn't Started

DESPITE the hot weather that most of the country has experienced in recent weeks, summer has not yet made its debut. That event will take place on Wednesday, June 21, at 4:12 p. m., eastern standard time.

At that moment the sun, which has been moving northward in the sky since last December, reaches its farthest north position and starts moving southward again. Astronomical convention has taken this event, called the summer solstice, as the beginning of summer.

Because the sun is so far north in the sky it now rises much earlier, and sets much later, than at any other time of year. As a result countries in the northern hemisphere get much more sunshine than during other seasons, and this is part of the reason that we now have warm weather.

The other reason is that with the sun rising so much higher in the sky during the day, the sunshine, with its heat rays, is much more concentrated than in winter, when the rays strike the earth's surface at a more glancing angle.

Science News Letter, June 17, 1933

PHYSICS

Do Not Try to Visualize Atomic Heart, is Advice

THE NUCLEUS of the atom has been described at various times as analogous to a solid or crystal, or to a liquid or droplet, or as a complicated molecule. Recently a further analogy has depicted the nucleus as a system resembling an atom which, instead of having electrons moving about a center, had protons and neutrons whirling about.

All of these models have had successes which were discussed by Dr. R. M. Langer of the California Institute of Technology in a recent symposium. Dr. Langer emphasized the fact that there must be some general principles underlying the various successes of these points of view, and that no success of this type could be taken as an indication that the model which it used was the correct one.

In fact, Prof. Niels Bohr, the Danish physicist now at Pasadena, feels that for the time being we should try to get along as much as possible without a model of the nucleus. Some features cannot be described in terms of notions with which we are familiar. The nucleus has masses and charges in it, says Prof. Bohr. We know something about the total values of these components and we had better admit ignorance about the details of structure.

Dr. Langer showed how he and R. W. Raitt were led to expect that beryllium alone of all the known light weight elements is unstable. This expectation was verified experimentally. Further investigations are planned with volatile organic compounds containing beryllium. If such compounds can be prepared the whole subject could be clarified in a short time.

Science News Letter, June 17, 1933

IN SCIE

PLANT PATHOLOGY

New Grain Disease Stumps Australian Wheat Breeders

BOTANISTS at the Fifth Pacific Science Congress in Vancouver heard from Dr. W. L. Waterhouse of the University of Sydney, Australia, of the quandary into which the wheat breeders of his country have been thrust by the mysterious behavior of a parasitic fungus, the rust disease of grains. They had been used to fighting several well-known, almost standardized forms of this disease. Suddenly there appeared an entirely new form of grain rust, which has quite displaced the enemies they had become used to and could deal with fairly effectually. This new foe is the more troublesome since all Australian grain varieties are extremely susceptible to it. Nobody knows where it came from.

Science News Letter, June 17, 1933

CHEMISTRY

Distillation Now Separates Light From Heavy Water

DISTILLATION and adsorption can now be used to concentrate heavy weight water out of ordinary water, Drs. Edward W. Washburn and Edgar R. Smith of the U. S. Bureau of Standards have determined.

Electrolysis was the earlier method used by Dr. Washburn and his associates to manufacture water heavier than normal. The common sorts of hydrogen and oxygen, masses 1 and 16, are given off first as gases in electrolysis, leaving the remaining water rich in the double weight hydrogen and the heavier oxygen isotopes 17 and 18.

Because the heavy water so made was found to have a higher boiling point, Dr. Washburn realized that it should be possible to fractionate water by distillation. He distilled ten quarts and the two portions were found to differ in density by 65 parts per million.

Water was also fractionated by allowing a mass of activated charcoal to stand for three weeks in water. The adsorbed water was denser than that unadsorbed.

Science News Letter, June 17, 1933

EE FIELDS

PSYCHIATRY

Illness of Accused May Not be Sham

THE ILLNESS which overtakes a man who is faced with trial on a criminal charge is not necessarily a sham or pretense trumped up in order to avoid trial. The worry and shock of a criminal law suit may well break the nervous and mental makeup of a man, Dr. Theodor Diller, of Pittsburgh, told the American Medical Association.

Many other kinds of lies are problems which concern physicians. The doctor must be able to handle a case much as a lawyer at times when he is trying to get at the truth about his patient, Dr. Diller pointed out. The physician must hear direct statements and then cross-examine. Leading questions, however, must be avoided. In cases of mental disease it is particularly important to hear both sides, for statements that sound plausible may be misleading.

The lie that denies a charge of an unpleasant nature is not so much a lie as a defensive reflex action, Dr. Diller observed. Nearly anyone on the witness stand, in Dr. Diller's opinion, will lie when the answer to a question will be damaging.

The times when a physician must lie to help his patients and the times when he must tell them the truth were also discussed.

Science News Letter, June 17, 1933

METEOROLOGY

Mt. Washington Adds Observatory Stations

THE MOUNT Washington Observatory added two meteorological stations to the three which have been in operation throughout the winter. The two special stations are located at an altitude of 3,900 feet on the east slope and 4,600 feet on the opposite side of the mountain. They have been especially equipped by the Blue Hill Observatory with barographs and mercurial and aneroid barometers so that the dynamic influence of the wind on atmospheric pressure may be studied. All the usual meteorological observations are also being made.

These two stations, as well as the Pinkham Notch camp at 2,000 feet at the eastern base of Mount Washington and the base station at 2,600 feet on the western foot, are in direct communication with the summit observatory, 6,300 feet, by telephone and radio. Thus, observers are able to make simultaneous studies of changing meteorological conditions at the different altitudes and exposures.

So well did the food and fuel supplies at the summit hold out during the winter and spring that no additional supplies had to be transported on the cog railway which ran its first work train to the summit in mid-May.

For more than a week eight hundred pounds of calcium chloride were used on the long snow drift on the fifth mile of the auto road to enable members of the New Hampshire Academy of Science, which met at the Glen House at the foot of the road June 2 to 4, to visit the Observatory.

Science News Letter, June 17, 1933

ETHNOLOGY

South Sea Life Neither Primitive Nor a Paradise

GLAMOROUS ideas, bred largely in Hollywood studios, about the simple idyllic life of "primitive" South Sea tribes received a jolt at the hands of Prof. R. Thurnwald of Yale University, who spoke before the Fifth Pacific Science Congress in Vancouver.

Their lives are anything but paradisiacal and their culture anything but simple, he said. To that extent at least they cannot be said to be primitives.

Neither is it possible to assume a common origin of two groups because one finds a few traits in common between them, like similar language or a similar way of building houses or hunting heads. A group in its history and migrations may borrow customs from many of its neighbors. Prof. Thurnwald told of finding a people on the northern coast of New Guinea who used a Papual vocabulary with a Melanesian grammar. It reminded him, he said, of a community of Negroes in one part of Texas, whose language is a Bavarian dialect. Their one-time German masters have long since moved away and blended with the general American population, but these Aframericans keep the old speech.

Science News Letter, June 17, 1933

SURGERY

Detached Lining of Eye Replaced by Surgery

HOW SURGEONS can reattach the lining of the eye that has become separated by disease or accidental injury was told by Dr. Peter C. Kronfeld of Chicago at the meeting of the American Medical Association.

In the condition known as "detached retina" the inner coat of the eye, the retina, which receives the optical image, may be partly or completely detached, with disturbance or loss of vision.

In one of Dr. Kronfeld's cases the patient had been struck first by a snowball and later by the horizontal bar in pole vaulting. Another patient was a prize fighter who noticed a disturbance of vision after a blow on the head. An automobile tire blew out in the face of the third patient, injuring his left eye.

The eye can be restored to nearly normal function so that the patient's vision is nearly normal, if the operation is done within a reasonably short time. The age of the patient also has a bearing on recovery, older patients being less fortunate in this respect.

The condition affects color vision as well as vision in general. In the cases in which a color blindness for blue and green was noted, this defect was corrected.

Science News Letter, June 17, 1933

GEOLOGY

Rocks of Pacific Ocean Unlike Others of World

THE ROCKS underlying the Pacific Ocean are different from those of the other ocean basins of the world as well as from those of the land areas, Dr. B. Gutenberg of the California Institute of Technology told the Fifth Pacific Science Congress at its meeting in Vancouver. The granites and sedimentary rocks that make up the bulk of the continental masses are absent, as are also the basic rocks that underlie them and form the floors of the other oceans.

Instead, the Pacific bottom appears to consist of even more strongly basic rocks, that may continue downward without any sudden change to a depth as great as 1200 kilometers (about 725 miles). Dr. Gutenberg has been led to these conclusions by a study of the rates of earthquake-wave travel through various regions of the earth.

Science News Letter, June 17, 1933

EVOLUTION

The Age of Man

"A Classic of Science"

Here Lyell Created Consternation Among Conservatives By Coming Out in Favor of Darwin's Evolution Theory

THE GEOLOGICAL EVIDENCES OF THE ANTIQUITY OF MAN with remarks on theories of The Origin of Species by Variation. By Sir Charles Lyell. London: John Murray, 1863. This is an exact reprint of extracts from the original publication.

WHEN SPEAKING in a former work of the distinct races of mankind, I remarked that, "if all the leading varieties of the human family sprang originally from a single pair," (a doctrine, to which then, as now, I could see no valid objection,) "a much greater lapse of time was required for the slow and gradual formation of such races as the Caucasian, Mongolian, and Negro, than was embraced in any of the popular systems of chronology."

In confirmation of the high antiquity of two of these, I referred to pictures on the walls of ancient temples in Egypt, in which, a thousand years or more before the Christian era, "the Negro and Caucasian physiognomies were portrayed as faithfully, and in as strong contrast, as if the likenesses of these races had been taken yesterday." In relation to the same subject, I dwelt on the slight modification which the Negro has undergone, after having been transported from the tropics, and settled for more than two centuries in the temperate climate of Virginia. I therefore concluded that, "if the various races were all descended from a single pair, we must allow for a vast series of antecedent ages, in the course of which the long-continued influence of external circumstances gave rise to peculiarities increased in many successive generations, and at length fixed by hereditary transmission."

So long as physiologists continued to believe that Man had not existed on the earth above six thousand years, they might, with good reason, withhold their assent from the doctrine of a unity of origin of so many distinct races; but the difficulty becomes less and less, exactly in proportion as we enlarge our ideas of the lapse of time during which different communities may have spread slowly, and become isolated, each exposed for ages to a peculiar set of conditions, whether of temperature, or food, or danger, or ways of living. The law of the geometrical rate of the increase of population which causes it always to press hard on the means of subsistence, would ensure the migration, in various directions, of offshoots from the society first formed abandoning the area where they had multiplied. But when they had gradually penetrated to remote regions by land or water,—drifted sometimes by storms and currents in canoes to an unknown shore,—barriers of mountains, deserts, or seas, which oppose no obstacle to mutual intercourse between civilised nations, would ensure the complete isolation for tens of thousands of centuries of tribes in a primitive state of barbarism.

Some modern ethnologists, in accordance with the philosophers of antiquity, have assumed that men at first fed on the fruits of the earth, before even a stone implement or the simplest form of canoe had been invented. They may, it is said, have begun their career in some fertile island in the tropics, where the warmth of the air was such, that no clothing was needed, and where there were no wild beasts to endanger their safety. But as soon as their numbers increased, they would be forced to migrate into regions less secure and blest with a genial climate. Contests would soon arise for the possession of the most fertile lands, where game or pasture abounded, and their energies and inventive powers would be called forth, so that, at length, they would make progress in the arts.

But as ethnologists have failed, as yet, to trace back the history of any one race to the area where it originated, some zoologists of eminence have declared their belief, that the different races, whether they be three, five, twenty, or a much greater number, (for on this point there is an endless diversity of opinion,) have all been primordial creations, having from the first been stamped with the characteristic features, mental and bodily, by which they are now distinguished, except where intermarriage has given rise to mixed or hybrid races. Were we to admit, say they, a unity of origin of such strongly marked varieties as the Negro and European, differing as they do in colour and bodily constitution, each fitted for distinct climates, and exhibiting some marked peculiarities in their osteological, and even, in some details of cranial and cerebral conformation, as well as in their average intellectual endowments,—if, in spite of the fact that all these attributes have been faithfully handed down unaltered for hundreds of generations, we are to believe that, in the course of time, they have all diverged from one common stock, how shall we resist the arguments of the transmutationist, who contends that all closely allied species of animals and plants have in like manner sprung from a common parentage, albeit that for the last three or four thousand years they may have been persistent in character? Where are we to stop, unless we make our stand at once on the independent

SIR CHARLES LYELL, 1797-1875

crea ion of those distinct human races, the history of which is better known to us than that of any of the inferior animals?

So long as Geology had not lifted up a part of the veil which formerly concealed from the naturalist the history of the changes which the animate creation had undergone in times immediately antecedent to the Recent period, it was easy to treat these questions as too transcendental, or as lying too far beyond the domain of positive science to require serious discussion. But it is no longer possible to restrain curiosity from attempting to pry into the relations which connect the present state of the animal and vegetable worlds, as well as of the various races of mankind, with the state of the fauna and flora which immediately preceded.

In the very outset of the enquiry, we are met with the difficulty of defining what we mean by the terms "species" and "race"; and the surprise of the unlearned is usually great, when they discover how wide is the difference of opinion now prevailing as to the significance of words in such familiar use. But, in truth, we can come to no agreement as to such definitions, unless we have previously made up our minds on some of the most momentous of all the enigmas with which the human intellect ever attempted to grapple.

It is now thirty years since I gave an analysis in the first edition of my "Principles of Geology" of the views which had been put forth by Lamarck in the beginning of the century, on this subject. In that interval the progress made in zoology and botany, both in augmenting the number of known animals and plants, and in studying their physiology and geographical distribution, and, above all, in examining and describing fossil species, is so vast, that the additions made to our knowledge probably exceed all that was previously known; and what Lamarck then foretold has come to pass; the more new forms have been multiplied, the less are we able to decide what we mean by a variety, and what by a species. In fact, zoologists and botanists are not only more at a loss than ever how to define a species, but even to determine whether it has any real existence in nature, or is a mere abstraction of the human intellect, some contending that it is constant within certain narrow and impassable limits of variability, others that it is capable of indefinite and endless modification.

Science News Letter, June 17, 1933

● ▼ RADIO ▲

PETROLEUM ON WINGS and WHEELS

by

Dr. Gustav Egloff

Chief Chemist of the Universal Oil Products Company

Friday, June 23, at 1:45 p.m. Eastern Standard Time over stations of the Columbia Broadcasting System. Each week a prominent scientist speaks over the Columbia System under the auspices of Science Service.

ICHTHYOLOGY

Not All Fish Are Voiceless; Some Can Call Their Mates

FISH ARE commonly reputed to be voiceless, yet some species can make sounds that apparently serve as calls to their mates. So stated Dr. Shinkishi Hatai, marine biologist of the Tohuku Imperial University, Japan, before the Fifth Pacific Science Congress. Several species of fish produce distinct sounds, he said, either by friction of the fins, grinding their teeth, emitting air through a narrow passage or through specially developed sound-producing organs. These sounds may serve as warnings as well as for mate-calls.

Dr. Hatai developed this point during a discussion of the sensitiveness of fish and other marine organisms to vibrations in general. A very little movement of a boat's oars, he related, served to attract to his boat numerous specimens of the handsome red Japanese fish called "tai" at a distance of forty yards.

This sensitiveness of fish to changes in their environment, imperceptible to human organs or man-made instruments, may have considerable importance, both scientific and economic, in connection with the almost incessant earthquakes with which Japan is visited. Before two recent rather severe earthquakes the uneasiness of the sea fish in certain regions was noted. On both occasions they consistently refused baited hooks.

The consequences of an earthquake that changes the level of the sea bottom may be revolutionary to the animal societies living on it or in the water above it Dr. Hatai continued. Most bottom communities are adjusted to a given depth of water, as it affects quality and intensity of light, oxygen concentration, and other factors. In turn, these anchored animals and plants are related to the swimming animal population in the roles of food, shelter, enemies, etc. An earthquake that revolutionizes the life balance on a given stretch of sea bottom may very well ruin a whole fishing community though it does not wreck a house or a boat, simply through the changes it brings to pass in the animal communities that constitute the support of the people.

Science News Letter, June 17, 1933

GEOLOGY

Atlantic Coast Damage Worst in Years

ACCUMULATING reports reveal that the past winter brought the worst damage in years to the Atlantic coast. Numerous buildings and shore structures were battered into a state of wreckage by stormy waves. Abnormal amounts of soil were stolen from the shore line by the sea.

The damage is laid to a succession of extreme storm tides such as occur every 25 to 30 years. In intervening years it is the usual thing for damage to the coast to total millions of dollars, but in years of storm tides the losses pyramid.

In editorial comment on this serious property loss, the *Engineering News-Record* calls upon coast states to take defensive action. Local protective measures against storms and tides are of little effect, it is pointed out, because resistance of any one section of the shore line is interwoven with the resistance of adjoining sections.

Declaring that few states have taken cognizance of the situation, the editor urges that protecting the coast against the sea should be one of the major fields of public improvement construction.

Science News Letter, June 17, 1933

ENTOMOLOGY

Grasshoppers Will be Bad This Summer, Survey Shows

GRASSHOPPERS are going to be bad this summer in the great wheat states of the West, if the insects continue to develop at the rate they have started this spring. This is indicated by a survey just completed by field research men of the Bureau of Entomology, U. S. Department of Agriculture.

Survival of eggs in the soil through the winter was practically perfect in all the Great Plains states, Dr. W. H. Larrimer, principal entomologist in charge of the division of cereal and forage insects, informed Science Service. Hatching began in the middle of May. For a time it was checked by the cool, wet weather, though the eggs still remain undamaged. But with the sudden onset of hot weather hatching resumed at accelerated speed.

The prospects are worst in North Dakota, although in South Dakota conditions are worse than was expected. In Minnesota the insects are fewer, because last summer's active poison warfare reduced the breeding stock. From these northwestern states the grasshopper situation is grave, all the way south to Arizona, where it is more serious than at any time in the past fifteen years.

The grasshoppers can be effectively fought by the distribution of sweetened bran baits poisoned with arsenic. This is usually done by the farmers, with aid from the states or counties. However, with the fiscal affairs of all states none too good and some of them desperate, the munitions of warfare may be lacking at exactly the points on the battle line where they are most needed.

Thus, South Dakota has prospects for an unusually severe attack by the enemy, and no money at all to finance a defense campaign. Minnesota, on the other hand, with fewer 'hoppers, still has funds to provide protection for her fields.

There are four principal species of grasshoppers that figure as real crop pests, and all are active this spring. They are known as the two-striped grasshopper, the warrior grasshopper, the differential grasshopper, and the lesser migratory locust. The latter is a relative of the old-time plague, the Rocky Mountain locust.

Other insect pests are also spreading damage. Mexican bean beetles have been discovered at Monticello, Fla., and in southern Mississippi. This is the first southward extension of their holdings since their first discovery in northern Alabama in 1919.

Among enemies of cereal crops, the chinch bug and the corn ear worm figure prominently; fruit aphids and plum curculio are raiding orchards, while the messy webs of the tent caterpillar are disfiguring roadside trees all the way from Maine to Maryland.

Science News Letter, June 17, 1933

ARCHAEOLOGY

Grave of Young Girl Opens Fashion Mystery

FOUND—young girl's body in an oak coffin. This discovery in Denmark has opened up a scientific mystery. Archaeologists are puzzled, not to account for the girl's death, but to account for her unusual costume.

When the coffin was opened it showed a girl of the Bronze Age, with fair bobbed hair and a short skirt. That was as surprising to the archaeologists as if they had opened an American grave of 1776 and found a colonial maid with bobbed hair and knee length dress. The usual Bronze Age styles are well known from previous tomb discoveries. Women and girls in northern Europe, centuries before Christ, ordinarily wore sedate, long dresses and long hair neatly caught in a net.

France, the land of fashion, is appropriately enough trying to solve the Bronze Age fashion puzzle. In the scientific journal *L'Anthropologie* M. R. Lantier suggests that the short skirt may have been a religious costume, or else a house dress.

When a young girl made offerings to the gods in ancient Denmark, she may have worn this special costume, and if a young priestess died, she perhaps had the privilege of being buried in her official dress. M. Lantier's reason for this theory is that votive figures have been found wearing similar costumes.

The girl's costume was of brown and bronze. Her fair short hair was bound with a fillet of wool. A short jacket of brown wool reached to the hips. Her knee-length skirt was made of intertwined, twisted strings, like a fringe, held in place at the bottom by a lacing. A tasseled belt of wool was fastened at her waist. A bronze earring was in her left ear, and bronze bracelets at her wrists. At the head of the body was a box made of bark containing the cremated remains of a child about seven or eight years old.

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CHEMISTRY

Alcoholized Gasoline Inferior, Says Petroleum Chemist

ALCOHOLIZED gasoline, advocated by groups of agricultural interests as a means for using up some of the surplus grain crops, is vigorously attacked as an inferior fuel at an increased cost, by Dr. Gustav Egloff of the Universal Oil Products Company, Chicago. He states that the American Automobile Association has made road tests using a ten per cent. alcohol blend motor fuel, which show decreased efficiency of about six per cent. when compared to gasoline.

"My own personal tests," he adds, "with alcohol blends purchased in the open market at Peoria, showed definitely that there is a mileage decrease per gallon when using the blend, compared with gasoline."

Dr. Egloff's conclusions contradict those of the advocates of alcoholized gasoline almost point for point. They claim snappier starting; he states that starting is made more sluggish. They claim better acceleration; he declares that the alcohol blend gives poor acceleration. They claim more miles per gallon; he states that the new fuel gives a lower mileage. And so on for a dozen other vital points in fuel performance.

A source of trouble, in Dr. Egloff's opinion, will be the active solvent properties of alcohol. "When blended with gasoline it has a solvent, cleansing and

loosening action on the metal parts of the tank, fuel lines and carburetor, particularly when the float is of cork shellaced type," he says. "The blend is also markedly corrosive to galvanized parts. The sediment carried down by the alcohol fuel tends to plug up feed lines, filters and jets giving endless difficulty."

Dr. Egloff, as well as a number of his colleagues, hold that if alcoholized gasoline comes into general distribution it will add to Uncle Sam's troubles in regulating the beverage alcohol traffic. While alcohol will remain blended with gasoline so long as little or no water is present, it can be separated out by the addition of water. It is claimed that bootleggers will make any "gas" tank a source of "alky," leaving the complaisant tank owner still in possession of dealcoholized but still saleable gasoline.

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MUSEOLOGY

Museum Makes Debut As Conference Scene

LONDON'S new Museum of Practical Geology had a strange debut for a museum, June 12.

Halls built for the proud display of gold and other mineral treasures of the British Empire found their first use as a stage for talk about gold and the world resources available in battling a world depression.

Construction of the new museum building was hastened to completion so that the fifteen hundred delegates to the world economic conference might move in. Exhibit halls have been turned into conference rooms, reception rooms, and lounges for the delegates. The great central hall is the formal meeting place for the sessions, with rows of desks installed and a dais where the King of England stood on the opening day to greet the conferees.

The institution which will take over the new building when the conference departs has a history of almost a century back of it. It was established in 1837, through efforts of the founder of England's Geological Survey, to preserve specimens of ore and metals and gem stones collected by the Survey. A few years later the collection moved into a building erected especially for it, where it has remained until the present.

Its new home is a dignified structure of white stone located between the Science Museum and the Natural History Museum in South Kensington.

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MEDICINE

Tannic Acid Bath Features Modern Treatment of Burns

A THREE-HOUR bath in tannic acid during which the burns become well tanned is a feature of the modern treatment of extensive burns as described by Dr. Donald B Wells of Hartford, Conn., at the meeting of the American Medical Association.

The use of tannic acid relieves the pain sufficiently so that the burned areas can be thoroughly cleaned. In this way infection can be prevented. Infection alone was the cause of the exhausting illness, many of the complications and a majority of the deaths from burns in the old days, in Dr. Wells' opinion.

The person with extensive burns is placed in a large tub of tannic acid solution, according to Dr. Wells' plan of treatment.

"He receives quantities of liquids to drink, in order to balance the loss of water. As soon as his pain is somewhat relieved, several attendants begin to work. For three hours they remove burned tissue as the solution loosens it and clean unburned areas with soap and water.

"By the time the patient is ready to be placed in bed a tan has formed over the burned portions. Then for seventy-two hours warm air is blown on him from an ordinary hair drier, while he is more or less constantly sprayed with tannic acid solution. After this the blower is used alone until the tissue has become perfectly firm, for only a little perspiration may break it and invite invasion by germs," Dr. Wells explained.

The method is especially successful in burns from gasoline explosions, ignited clothing and extensive scalds, he said. It can be used in any good hospital.

Science News Letter, June 17, 1933

Let Science News Letter Follow You During the Summer

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PUBLIC HEALTH

Seasons Affect Birth Rate and Infant Health

BOTH the birth rate and the health of newborn babies was affected by the season of the year, Dr. Lee Bivings of Atlanta, Ga., found from a study of negro infants in his city.

The diet of the prospective mother and the amount of sunshine also apparently influence the birth rate and infant health, he reported to the American Medical Association meeting in Milwaukee.

The birth rate for 1930, 1931 and 1932 was consistently higher in the winter quarter, he found. This fact suggests that the mothers who had the benefit of spring and summer sunshine in the period before the babies were born were more likely to give birth to healthy children.

The average weight of babies born in 1931 was higher than that of babies born in 1932. While many factors were involved, Dr. Bivings believes the greater amount of sunshine in 1931 had some influence. This opinion was borne out by the fact that babies born in Los Angeles, St. Petersburg and Atlanta, Ga., weighed more than those born in Iowa City and New Haven, Conn.

The studies showed that the health of the babies was not as good when their prenatal life began in the winter. Dr. Bivings explained this on the ground that it is during the winter months that the prospective mother's diet lacks sufficient vitamin B which is believed to have an important effect on the prenatal development of a child. These are likewise the months of least sunshine.

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LIBRARY SCIENCE

Library Show Windows Attract Many Readers

SHOP windows in front of a public library, with attractive displays to lure the "window shopper" inside to read a book, are a tremendous popular success in Baltimore.

This report from six months' experience with window displays at the Enoch Pratt Free Library was announced at the meeting of the American Association of Museums.

Gretta Smith, director of the exhibits, reported that the library's twelve great display windows are filled with new exhibits every two or three weeks. Book exhibits are obtained from the library itself. Societies and museums lend material to illustrate the subjects.

The library tries to keep up with the times and popular thought, Miss Smith explained. It fits its exhibits to holidays, current events, and subjects of general interest. Whatever the subject of a window, the thought always leads to appropriate books on the subject, available inside.

"Tremendous popular success of the street window displays of the new Enoch Pratt Free Library building in Baltimore is a matter of astonishment to everyone in the library," said Miss Smith's report. "School classes have had the library windows assigned as projects. Clergymen have mentioned them in sermons. The public has rushed to borrow the books displayed or to correct misspellings or to offer more and better material for display."

The windows are a favorite project of the librarian, Joseph L. Wheeler.

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at a peyote meeting may take into his system sixty or even seventy-five buttons, Mr. Petrullo reports.

Moreover, the visions that the amateur peyote-eater describes so brightly are dismissed by the Indian theologian as not religiously important. The experimenters tell of seeing brilliant flashes of color that change in infinite variety. They feel that time flows by endlessly, and walls of a room recede to magnificent distances. All their senses are keyed to a high pitch of receptiveness. A redbird on a fence becomes a dazzling splotch of color. And as he looks wonderingly on the curious world about him, the peyote-eater also tells of feeling great muscular weakness, sometimes nausea. His mind remains clear.

And so on in endless detail, the experimenters tell of their sensations.

But, Mr. Petrullo points out that the Indian probably does not see all these fantastic sights. Peyote sharpens the senses, unquestionably. In that acutely sensitive condition, the experimenters have let their minds play over their surroundings. But Indians tell Mr. Petrullo that they can control peyote visions. They can direct the effects of the drug on mind and body. The Indian's religious purpose is to concentrate on God and to use the peyote to get into communication with the Great Spirit and learn what is right for him to do.

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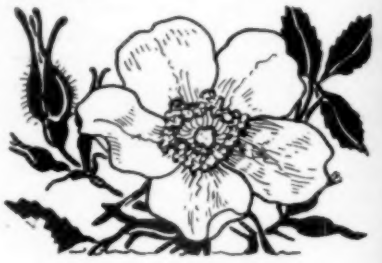
NATURE RAMBLINGS by Frank Thone

NOMENCLATURE



Not All Jawbreakers

MANY persons are prone to say, whenever botany or zoology is mentioned, "I'd really like to study them, but I couldn't ever get those awful long names through my head!" And then they begin straightway to enthuse fluently over their success with beds of chrysanthemums, gladioli, narcissi, gaillardias, heleniums, delphiniums, asters, irises, hyacinths and what not; or they will tell you what lovely hepaticas and trilliums they saw in the woods last spring—all in blissful unconsciousness that they are reeling out a whole string of the same dreaded jawbreaking Latin names!

For many of our common garden and wildflowers, many of our familiar animals and birds, are known to our common everyday conversation by exactly the same names they bore in ancient Greece and Latium, or by very slight variations from their classic titles. The rose for example was "rosa" to the Romans, and the violet was "viola." And the splendid rhododendron bush: the Greeks had a name for it—they called it rhododendron.

When you go to the zoo you will find that the ancients have been there ahead of you, naming the beasts like Adam in the garden. Elephant is Greek "elephas," and camel is Latin "camelus." Lion is "leo" and leopard is a spotted lion: "leopardus." But for animals which the ancients did not know well or at all, modern scientists have often made pseudo-Latin names out of their native originals. Thus the gorilla is *Gorilla* still when he appears in the zoology books, while the chimpanzee, which we abbreviate in English as "chimp" parades under a different single syllable for his scientific title: the professors call him *Pan*.

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First Glances at New Books

Additional Reviews On Page 384

Mining

MAN AND METALS—T. A. Rickard—*Whittlesey House*, 2 vol., $10. As a history of mining in relation to the development of civilization, these two volumes by an eminent mining engineer and editor will assume a permanent place upon reference shelves. This does not mean that the book is not readable, for it is. Mr. Rickard's well-illustrated story begins in the ages without metals and ends with a glimpse at the romance of modern mining.

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Vocational Guidance

CAREERS AHEAD—Joseph Cottler and Harold Brecht—*Little, Brown*, 312 p., $2.50. Telling in narrative form a little about each of a number of occupations. Entertaining and beautifully illustrated by photographs in aquatone. Intended for the high school student.

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History of Science

THE LAMARCK MANUSCRIPTS AT HARVARD—Edited by William Morton Wheeler and Thomas Barbour—*Harvard Univ. Press.*, xxxi+ 202 p., $2.50. Students of the history of zoology and of evolution will eagerly welcome this book, making generally accessible source-material hitherto available only by pilgrimage to Cambridge. The first part reproduces the manuscripts in their original language; the second gives good English translations. The book comprises Lamarck's writings on Gall's System; Idea and Imagination; Analytic Revision of Human Knowledge; Zoological Questions; Natural History, and General Observational Excursion.

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Transportation

THE TRANSPORTATION CRISIS—G. Lloyd Wilson—*Holston House, Sears*, 334 p., $2.50.

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Archaeology

THE EXCAVATIONS AT DURA-EUROPOS, Fourth Season, 1930-1931—Edited by P. V. C. Baur, M. I. Rostovtzeff, and Alfred R. Bellinger—*Yale University Press*, 290 p., 26 pl., $3. Continuing work at this stronghold of the desert, the expedition found new temples, the governor's palace, and inscriptions, graffiti, and frescoes of great interest. Several blocks of houses were cleared, showing the character of the city. The inscription on the triumphal arch outside the walls was reconstructed, revealing that the Romans were in Dura at least fifty years earlier than had been supposed.

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Agriculture

PREVENTION AND CONTROL OF FARM FIRES—Edited by Alson Secor—*Nat'l Fire Protection Ass'n.*, 167 p., 85c. Fire is an even worse enemy of the farmer than of the urbanite, for the fire department is farther away and apt to be less massive in its artillery. The rural dweller must therefore be more self-sufficient, and especially must he depend on sound construction and preventive precautions. This book, covering the whole field from gasoline stoves and incubators to lightning and forest fires, will be a most useful aid.

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Biography

JESSE MACY: AN AUTOBIOGRAPHY—Edited and arranged by Katherine Macy Noyes—*Thomas*, 192 p., $2. The story of the late Prof. Jesse Macy of Grinnell College, pioneer in the development of political science as a distinct academic discipline, quietly told as his Quaker upbringing would necessarily have it, yet rich with incident as a career which bridged the time between the Civil War and the World War was bound to be.

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Psychology-Education

PSYCHOLOGICAL PRINCIPLES OF EDUCATION—Francis F. Powers and Willis L. Uhl—*Century*, 570 p., $2.50. A textbook designed for first-year courses in educational psychology. The authors emphasize a classification of six types of mental function: problem solving, acquisition of knowledge, acquisition of skill, social competence, creative activity, and aesthetic experiencing. A discussion of theory for students rather than a practical handbook for teachers.

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Education

NINTH YEARBOOK—Committee on Standards—*Educational Press Association of America*, 31 p., Free.

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Mathematics

COLLEGE ALGEBRA—Joseph B. Rosenbach and Edwin A. Whitman—*Ginn*, 394 p., $2.

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Reference

FAMOUS FIRST FACTS—Joseph Nathan Kane—*H. W. Wilson*, 757 p., $3.50. A record of first happenings, discoveries and inventions in the United States which will be useful for reference shelves and for those who delight in tidbits of historical facts.

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Ornithology

BRIEF BIRD BIOGRAPHIES—J. Fletcher Street—*Grosset and Dunlap*, 160 p., $1. Arranged by habitat associations, the commoner birds are briefly described and most attractively pictured, one whole page to each bird. An excellent book for the really appreciative amateur.

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Psychology

THE BLIND IN SCHOOL AND SOCIETY—Thomas D. Cutsforth—*Appleton*, 263 p., $2.50. The author has more than an academic interest in blind children and adults: when he was eleven years old he lost his sight. The blind child is not just a normal child who cannot see. He needs special care and understanding.

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Pathology

URINE AND URINALYSIS—Louis Gershenfeld—*Lea and Febiger*, 272 p., $2.75. For the practicing physician, the laboratory technician, the nurse and others professionally interested in the subject. The book is more than a laboratory manual, in that it discusses briefly but simply the physiological and pathological aspects of kidney secretion and of the various diagnostic tests now included in urinalysis.

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Bibliography

BOOK LIST BOOKS, 1932—*American Library Association*, 57 p., 65c.

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Engineering

THE HOOVER DAM POWER AND WATER CONTRACTS AND RELATED DATA—Ray Lyman Wilbur and Northcutt Ely—*Govt. Print. Off.*, 674 p., not for sale.

Science News Letter, June 17, 1933

General Science

REPORT OF THE NATIONAL RESEARCH COUNCIL FOR THE YEAR, JULY 1, 1931—JUNE 30, 1932—*Govt. Print. Off.*, 99 p., Free.

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Additional Reviews On Page 383

History-Social Sciences

A CENTURY OF PROGRESS—Edited by Charles A. Beard—*Harper,* 452 p., $3. The last hundred years of American progress are reviewed by authorities in fifteen different fields. Dr. Beard, the historian, contributes a chapter on The Idea of Progress. Invention as a Social Manifestation is by Waldemar Kaempffert, Medicine is written by Fielding H. Garrison, and the Advancement of Natural Science is by Watson Davis. Other authors are: Henry Ford, Edward Hungerford, Frank O. Lowden, William Green, H. Parker Willis, Jane Addams, Grace Abbott, Charles H. Judd, Fiske Kimball and John Erskine. The book is timed to appear so that it may be read during the progress of Chicago's Century of Progress Fair.

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Archaeology

THE ARCHAEOLOGY OF GREENE COUNTY—Glenn A. Black—*Historical Bureau, Indiana Library and Historical Dept.,* p. 183-328, 36 pl., Free. Evidence is presented that mounds in this Indiana county were products of the Hopewell Mound Builder culture, and at the same time represent burial customs of Algonquians who had settlements nearby. The study therefore throws new light on the identity of mound-building tribes whose place in Indian racial history has been but vaguely understood.

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Entomology

BEES, WASPS, ANTS AND ALLIED INSECTS OF THE BRITISH ISLES—Edward Step—*Warne,* 238 p., 111 pl., $4.50. For the study of cosmopolitan and circumboreal species, this account of British hymenoptera will be most useful to North American students; it can be turned to good account also where the insects, though not identical, are more or less closely allied to ours.

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Archaeology

DISCOVERIES IN ANATOLIA, 1930-31—Hans Henning von der Osten—*Univ. of Chicago Press,* 149 p., 134 figs., $2. The doings of the Hittites are becoming better understood as a result of this series of expeditions to Anatolia, and particularly to the Alisar mound. It has now been determined that the "aliens," whose presence at ancient Alisar proved puzzling, were not Mesopotamian merchants but the original Hittites who came to conquer Anatolia in the third millenium B.C. Besides digging into various strata of the Alisar mound, the expedition explored other ruins and made test excavations at the Hittite site of Gavur-Kalesi.

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Physiology-Chemistry

PHYSIOLOGICAL EFFECTS OF RADIANT ENERGY — Henry Laurens — *Chemical Catalog,* 610 p, $6. With comprehensive and useful details the professor of physiology in the Tulane University School of Medicine has reviewed and summarized the effects of sunlight and artificial radiations upon diseases and bodily functions. Prof. Laurens considers that the real triumphs of solar and artificial radiation, prophylactic and curative, are seen in rickets and extra-pulmonary tuberculosis. This is one of the American Chemical Society series of scientific and technologic monographs.

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Philosophy

HISTORY, PSYCHOLOGY, AND CULTURE — Alexander Goldenweiser — *Knopf,* 475 p., $5. A collection of essays and lectures forming a massive philosophical discussion of social theory.

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Education-Psychology

PROBLEMS IN THE EDUCATION OF VISUALLY HANDICAPPED CHILDREN—Ralph Vickers Merry—*Harvard University Press,* 243 p., $2.50. A practical book of guidance for those entrusted with the care of blind children or those with partial sight. Pre-school training, health problems, and personality problems are among the topics discussed.

Science News Letter, June 17, 1933

Mathematics

FIRST COURSE IN ALGEBRA—William J. Milne and Walter F. Downey—*American Book Company,* 395 p., $1.20.

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Meteorology

AN ANALYSIS OF METEOROLOGY AS RELATED TO THE OPERATION OF AIRCRAFT—Harold Lewis Kirby—*Arthur H. Clark Co.,* Glendale, Cal., 134 p., $4.

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Chemistry

THE DISCOVERY OF THE ELEMENTS—Mary Elvira Weeks—*Mack Printing Co.,* 363 p., $2. With ample literature citations and illustrations, the historic stories of the discovery of the chemical elements is told in twenty-one chapters which are reprints of articles that have appeared in the Journal of Chemical Education. There is also a useful chronology extending from the seventeenth century to the present.

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General Science-Sociology

SCIENCE AND CIVILIZATION—Guy Stanton Ford—*Univ. of Minn.,* 29 p., 25c. The dean of the University of Minnesota's Graduate School argues in a Sigma Xi address for the application of science to our social structure.

Science News Letter, June 17, 1933

Psychology

INTELLIGENCE, ITS MANIFESTATIONS AND MEASUREMENT—Paul L. Boynton—*Appleton,* 466 p., $2.50. A textbook for college students on mental differences and their measurement.

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Geography

GEOGRAPHIC SURVEYS—Vernor C. Finch and Robert S. Platt—*Univ. of Chicago Press,* 76 p., 10 folded maps, 50c. The three studies included in this collection of bulletins are: Geographic Surveying; Montfort, a Study in Landscape Types in Southwestern Wisconsin; and Magdalena Atlipac, a Study in Terrene Occupancy in Mexico.

Science News Letter, June 17, 1933

Chemistry

THE CHEMISTRY OF ORGANIC COMPOUNDS—James B. Conant—*Macmillan,* 623 p., $4. By the president-elect of Harvard University and professor of chemistry at that great educational institution, this text is designed for a full year's course.

Science News Letter, June 17, 1933

Mathematics

MODERN HIGHER ALGEBRA—Webster Wells and Walter W. Hart—*D. C. Heath,* 410 p., $1.56.

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